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EXAMINER

JONES, HUGH M

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**Technology Center 2100**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 13

Application Number: 09/344,169

Filing Date: 6/24/1999

Appellant(s): Corr

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Joseph G. Swan

For Appellant

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**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 12/26/2002.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is deficient because

- Appellants attempt to introduce argument and commentary relating to and denigrating the prior art;
- Appellants appear to be introducing arguments relating to the meaning of a selected “*mode of operation*” beyond that disclosed in the original specification (an implied link between selecting a mode of operation and any connection to the claimed categories). Furthermore, Appellants refer to the specification to support such a connection - but such demonstration is not persuasive. Appellants refer to the fifth full paragraph, page 5. The paragraph is recited:

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“Once the categorisation has finished, these effects can be back-annotated onto the traditional static timing analysis as shown in figure 3. The degree of effect very likely...possible could be selected by the user to trade run times against accuracy”.

The Examiner, respectfully, can not determine the meaning of “...” in the context of the paragraph.

**(6) Issues**

Appellant's brief refers to objections to the claims and specification as appealable issues. These issues relate to *petitionable subject* matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

**(7) Grouping of Claims**

The Appellant's statement in the brief that certain claims do not stand or fall together is not agreed with. Appellants have *merely pointed out differences in what the claims cover*. Section 1200 provides guidance:

(7) Grouping of Claims. For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone, unless a statement is included that the claims of the group do not stand or fall together and, in the argument section of the brief (37 CFR 1.192(c)(8)), appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable. If an appealed ground of rejection applies to more than one claim and appellant considers the rejected claims to be separately patentable, 37 CFR 1.192(c)(7) requires appellant to state that the claims do not stand or fall together, and to present in the appropriate part or parts of the argument under 37 CFR 1.192(c)(8) the reasons why they are considered separately patentable. The absence of such a statement and argument is a concession by the applicant that, if the ground of rejection were sustained as to any one of the rejected claims, it will be equally applicable to all of them. 37 CFR 1.192(c)(7) is consistent with the practice of the Court of Appeals for the Federal Circuit indicated in such cases as *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991); *In re Nielson*, 816 F.2d 1567, 2 USPQ2d 1525 (Fed. Cir. 1987); *In re King*, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); and *In re Sernaker*, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983). 37 CFR 1.192(c)(7) requires the inclusion of reasons in order to avoid unsupported assertions of separate patentability. The reasons may be included in the appropriate portion of the “Argument” section of the brief. For example, if claims 1 to 4 are rejected under 35 U.S.C. 102 and appellant considers claim 4 to be separately patentable from claims 1 to 3, he or she should so state in the “Grouping of claims” section of the brief, and then give the reasons for separate patentability in the 35 U.S.C. 102 portion of the “Argument” section (i.e., under 37 CFR 1.192(c)(8)(iii)). In the absence of a separate statement that the claims do not stand or fall together, the Board panel assigned to the case will normally select the broadest claim in a group and will consider only that claim, even though the group may contain two broad claims, such

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as "ABCDE" and "ABCDF.". The same would be true in a case where there are both broad method and apparatus claims on appeal in the same group. *The rationale behind the rule, as amended, is to make the appeal process as efficient as possible.* Thus, while the Board will consider each separately argued claim, the work of the Board can be done in a more efficient manner by selecting a single claim from a group of claims when the appellant does not meet the requirements of 37 CFR 1.192(c)(7). It should be noted that 37 CFR 1.192(c)(7) requires the appellant to perform two affirmative acts in his or her brief in order to have the separate patentability of a plurality of claims subject to the same rejection considered. The appellant must (A) state that the claims do not stand or fall together and (B) present arguments why the claims subject to the same rejection are separately patentable. Where the appellant does neither, the claims will be treated as standing or falling together. Where, however, the appellant (A) omits the statement required by 37 CFR 1.192(c)(7) yet presents arguments in the argument section of the brief, or (B) includes the statement required by 37 CFR 1.192(c)(7) to the effect that one or more claims do not stand or fall together (i.e., that they are separately patentable) yet does not offer argument in support thereof in the "Argument" section of the brief, the appellant should be notified of the noncompliance as per 37 CFR 1.192(d). Ex parte Schier, 21 USPQ2d 1016 (Bd. Pat. App. & Int. 1991); Ex parte Ohsumi, 21 USPQ2d 1020 (Bd. Pat. App. & Int. 1991).

Appellants have never previously argued the claims as other than a single group. Furthermore, Appellants have provided not presented any rationale or explanation for their grouping in the sections entitled "Grouping of Claims" or in "Arguments". In the "Arguments" section, Appellants have essentially only *recited the prior art teaching* followed by a *recitation of the claims* without pointing out the *patentable distinction*. Therefore, the Examiner considers the claims as a *single group*.

Furthermore, the Appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Appellants assert an exception to their grouping, wherein the grouping depends upon the outcome of the Appeals process.

**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

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5,983,006	Carlson et al.	11-1999
5,596,506	Petschauer et al.	1-1997

GAO et al. "Minimum cross-talk channel routing." IEEE Trans.

Computer-aided design of integrated Circuits and Systems, Vol. 15, issue

5, (May 1996), pp. 465-474.

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

**Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

The specification provides little detail pertaining to determining topological effects on crosstalk, calculating the relationship between clocked timing and crosstalk, what type of signal is carried on the aggressor wire, determination/calculation of timing margins which take into account crosstalk, and scaling.

The amendment filed 7/1/2002 introduced new matter into the disclosure. The added material which is not supported by the original disclosure is as follows: *wherein a user selects a mode of operation*. Claims 1-16 now recite this feature.

**Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to**

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**reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

Applicants have stated

“...that to the extent that such subject matter is not expressly disclosed in the prior art, it is fully described in the prior art, including in the references cited in the present Office Action. As noted in the Office Action, this was also pointed out in the last full paragraph of page 7 of the Specification.”

In other words, Applicants appear to be making a blanket assertion that features not expressly disclosed (*or incorporated by reference*) in the specification are to be considered part of the specification by virtue of their being disclosed in the prior art. This appears to be an attempt to change the specification via mere attorney argument, to the extent (*which is undefined*) necessary to traverse the 112(1) enablement rejections, and is considered as attempt to introduce new matter into the specification. See MPEP section 2163.06. Therefore, a 112(1) written description rejection has been applied against the claims. Specifically, The specification provides little detail pertaining to determining topological effects on crosstalk, calculating the relationship between clocked timing and crosstalk, what type of signal is carried on the aggressor wire (as in claim 2), determination/calculation of timing margins which take into account crosstalk, and scaling (as in claim 7).

The amendment filed 7/1/2002 introduces new matter into the disclosure. The added material which is not supported by the original disclosure is as follows: *wherein a user selects a mode of operation*. Claims 1-16 now recite this feature.

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**Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

- Claim 1, for example refers to “allowing a user to select a mode of operation”.

The meaning is unknown. Operation of what? Which modes?

**Claims 1-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gao et al. or Petschauer et al..**

**Claims 1-16 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Carlson et al..**

**(11) *Response to Argument***

Appellant's brief presents arguments relating to objections to the claims and specification. These issues relate to *petitionable subject* matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

***Response to Argument - Petitionable Matter - Objection to the Specification***

**This is a non-appealable issue.** The abstract of the disclosure is objected to because of new matter, for the following reasons. The amendment filed is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:  
*wherein a user selects a mode of operation.* This feature does not appear to disclosed in

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the original specification. Furthermore, the meaning of this feature is unclear. Applicant is required to cancel the new matter in the reply to this Office Action.

Appellants argue that the meaning of a selected “*mode of operation*” beyond that disclosed in the original specification (an implied link between selecting a mode of operation and any connection to the claimed categories) is supported in the fifth full paragraph, page 5. The paragraph is recited:

“Once the categorisation has finished, these effects can be back-annotated onto the traditional static timing analysis as shown in figure 3. The degree of effect very likely...possible could be selected by the user to trade run times against accuracy”.

The Examiner, respectfully, can not determine the meaning of “...” in the context of the paragraph and is not persuaded by such argument.

**Response to Argument - Petitionable Matter - Objection to the Claims**

**This is a non-appealable issue. Claims 1-16 are objected to because of the following.**

- claims 9-10 refer to “perturbation” coupling (perturb a given wire, for example).

This does not appear to be a standard term in the art. Its meaning, in the context of the invention is unknown, and should be reworded. The Examiner suggested the recitation “*electromagnetic* coupling” in paper # 10. Appellants argue that it is indeed electromagnetic coupling (page 5, Appeal Brief). Examiner and Appellants are in agreement - however, this should be reflected in the claims. The Examiner, respectfully, does not understand Appellants reluctance to clearly claim that which they regard/argue as their invention.

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- Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 6 is functionally identical to claims 1 and 3. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Functionally, Claim 6 indicates that no effects (*likely, possible or unlikely to affect timing*) are to be taken into account. Limitation 6 of claim 1 is inoperative under such a condition. Appellants argue (first paragraph, page 6, Appeal Brief) that:

"In other words, according to claim 6, the selected mode is such that no modification is performed in step (6) of claim 1. Thus, claim 6 is believed to further limit claim 1 and 3"

The Examiner, respectfully, is not persuaded by this and subsequent reasoning.

- the claims recite *allowing* a user to select a mode of operation. The claims should recite that a user *actually selects* a mode of operation. Appellants arguments are, respectfully, confusing and not persuasive.

**Response to Argument - 112(1) Rejections**

Applicant's arguments are not persuasive. Applicants still have *not addressed the specific merits* of the 112(1) rejection. It is noted that Applicants have argued (page 10, paper # 9 and page 7, Appeal Brief):

" to the extent that such subject matter is not expressly disclosed in Applicant's Specification, it is fully described in the prior art, including in the references cited in the

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present Office Action. As noted in the Office Action, this was also pointed out in the last full paragraph of page 7 of the Specification.”

The Examiner respectfully submits that Applicants statement that “...to the extent that such subject matter is not expressly disclosed...” does not address the merits of the rejection and appears to be an acknowledgment of *some degree (to the extent of)* of 112(1) deficiencies in the specification. The Examiner requires that Applicants direct Examiner’s attention *to the specification* and point out what *is* expressly disclosed. *The Examiner also submits that Applicant’s position puts the Examiner in the dubious position of providing enablement to applicant’s specification to the extent of the breath of the Examiner’s prior art search and to the extent of the expertise of the Examiner. The Examiner would also like to point out that the alleged enablement as provided by the Examiner’s prior art search was provided after Appellants’ filing date.* The Examiner also does not understand what is meant by “to the extent”.

It is also noted that Applicants rely on unknown external disclosures to provide support for enablement - *such references have not been provided to the Examiner.* Appellants’ blanket assertion that features not expressly disclosed (*or incorporated by reference*) in the specification are to be considered part of the specification by virtue of their being disclosed in the prior art appears to be an attempt to change the specification via mere attorney argument and is considered as attempt to introduce new matter into the specification. See MPEP section 2145 (Consideration of Applicant’s Rebuttal Arguments):

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**"I. ARGUMENT DOES NOT REPLACE EVIDENCE WHERE EVIDENCE IS  
NECESSARY**

Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection. See MPEP § 2129 and § 2144.03 for a discussion of admissions as prior art. The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."). See MPEP § 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration."

Applicants are reminded that said prior art (of record or otherwise) has *not* been incorporated into Applicant's specification. Furthermore, Applicants have not provided any prior art to the Examiner for review. Additionally, Applicant's reference to page 7 as allegedly referenced in the Office Action is not understood. The Examiner stated (paragraph 7, page 3, paper # 6) that,

"It is noted that Applicants have not provided an IDS. Applicants have admitted that they are aware of prior art - see description of figure 1, page 1 of the specification and the last sentence of the last full paragraph on page 7 of the specification."

The Examiner would like to point out that fulfillment of the duty to disclose, Applicant's admittance regarding prior art disclosure, and sufficiency of disclosure as per 112(1) requirements are separate issues. It is noted that Applicants have not provided the art as referred to on page 7 of the specification which they argue as providing support for

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enablement. It is also noted that the sentence in question refers to “many formulae exist for calculating approximations for wires in different topological configurations.” The Examiner is not sure which formulae and corresponding configurations Applicants are referring to. In any case, Applicants have provided no legal authority for their position.

There are a number of issues relating to incorporation by reference and the 112(1) rejections which are now addressed. It is noted that the instant application recites “means for” (“Means For” language is present in the “Summary of the Invention”) and further refers to non-patent literature in the specification (Applicants have admitted [last sentence of the last full paragraph on page 7 of the specification] that those of ordinary skill in the art at the time of the invention would have known the details pertaining to the calculation of coupling in various geometries.). This is interpreted as an apparent attempt to *incorporate by reference* disclosure in an attempt to traverse a 112(1) rejection.

However, this is an improper incorporation by reference in so far as there was no express incorporation by reference. Mere reference in the instant application to such material and argument in the Appeal Brief based on such material as *if it were part of the specification* is *also* not acceptable because: 1) it appears to be essential matter (essential matter may not be incorporated from non-patent literature) and, 2) “means for” claims may not rely on any incorporated material (see Atmel Corp. v. Information Storage Device, Inc., discussed later).

Section 2163.02 of the MPEP Standard for Determining Compliance With the Written Description.

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“The courts have described the essential question to be addressed in a description requirement issue in a variety of ways. *An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed."* In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Under Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), *to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter."* Ralston Purina Co. v. Far-Mar-Co., Inc., 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting In re Kaslow, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)).

Whenever the issue arises, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed. The subject matter of the claim need not be described literally (i.e., using the same terms or in haec verba) in order for the disclosure to satisfy the description requirement. If a claim is amended to include subject matter, limitations, or terminology not present in the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in that application. This conclusion will result in the rejection of the claims affected under 35 U.S.C. 112, first paragraph - description requirement, or denial of the benefit of the filing date of a previously filed application, as appropriate. 220 F.3d 1345, 55 U.S.P.Q.2d (BNA) 1636 (Fed. Cir. 2000).”

Enablement and written description are separate and distinct issues as it relates to the question of incorporation by reference. A rejection based on the enablement requirement of the statute may not be sustainable in this regard since the general

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incorporation of a U.S. patent by reference in appellant's specification may be sufficient to indicate what is likely to be known by persons of ordinary skill in the art. Cf. *In re Howarth*, 654 F.2d 103, 210 USPQ 689 (CCPA 1981). *The issue of compliance with the description requirement, however, is another matter entirely.* In this connection, attention is directed to *In re Blaser*, 556 F.2d 534, 194 USPQ 122, 125 (CCPA 1977). The function of the description requirement is to ensure that the applicant had possession, as of the filing date of his application, of the specific subject matter later claimed by him. It is required that the specification describe the invention sufficiently for those of ordinary skill in the art to recognize that the applicant invented the subject matter he now claims. In *re Smythe*, 480 F.2d 1376, 178 USPQ 279, 284 (CCPA 1973). That a person skilled in the art, given the incorporated disclosures, *might* decide to combine the teachings with those explicitly disclosed by Applicants is not a sufficient indication to that person that such is described as a particular feature of appellant's invention. *The doctrine of incorporation by reference is of no avail to applicants in this regard since there is no specific indication in the instant specification of the particular features disclosed by the incorporated references which correspond to those as claimed; nor does the specification identify the specific portions of the patent which applicant may have intended to rely upon to supplement his disclosure.* The purpose of incorporation by reference in an application of matter elsewhere written down is for economy, amplification, or clarity of exposition, by means of an incorporating statement clearly identifying the subject matter which is incorporated and where it is to be found. In *re de Seversky*, 474 F.2d 671, 177 USPQ 144, (CCPA 1973).

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With respect to “means for” claims, see Atmel Corp. v. Information Storage Device, Inc., 198 F.3d 1374 (Fed. Cir. 1999). In *Atmel*, the Federal Circuit reversed summary judgment that a means-plus-function claim was invalid for indefiniteness because the corresponding structure was in an article that had been incorporated by reference. Here, the majority explained that the search for corresponding structure should be done from the vantage point of one skilled in the art (i.e., the structure need not be explicit if it would clear to a skilled artisan). The court went on to say that the structure supporting the means-plus-function element must appear in the specification. A patent may not rely on a document that is incorporated by reference to support structure corresponding to a means-plus-function limitation in a claim. The structure corresponding to the recited function must be described within the four corners of the patent specification. The court also discussed the use of extrinsic evidence to construe a means-plus-function claim and to find corresponding structures.

With respect to the “means for” claims, it was interpreted during examination of the application that the structure corresponding to the recited functions is only that which is described within the four corners of the instant patent specification.

Appellants also argue (last two lines, page 8 to line 2, page 9, Appeal Brief) that support for means-plus-function claims is found on page 8 of the specification. The Examiner has reviewed the cited portion and, respectfully, is not persuaded.

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**Response to Argument - 102 Rejections**

**Claims 1-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gao et al. or Petschauer et al..**

*Gao et al.* disclose “*Minimum crosstalk channel routing.*” They further disclose that as technology advances, interconnection wires are placed in closer proximity and circuits operate at higher frequencies. Consequently, reduction of crosstalk between interconnection wires becomes an important consideration in VLSI design. In this paper, they study the gridded channel routing problem with the objective of satisfying crosstalk constraints for the nets. They propose a new approach to the problem which *utilizes existing channel routing algorithms and improves upon the routing results by permuting the routing tracks. The permutation problem is proven to be NP-complete.* A novel mixed ILP formulation and effective procedures for reducing the number of variables and constraints in the mixed ILP formulation are then presented. *Gao et al.* further disclose determining whether a line is critical (page 465, col. 1); crosstalk constraints and “ranking” of critical conductors (page 465, col. 2, first full paragraph; page 466, section II, first paragraph); ranking and routing the channels (page 465, col. 2, second paragraph to end of section I, page 466; page 466, section II, first and second paragraphs); and track permutations (page 467, col. 1, last paragraph to page 470, end of section IV) and timing slack (pg. 472, col. 2 to pg 473).

*Petschauer et al.* disclose a method according to the present invention, an integrated circuit chip is fabricated by the following steps:

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1) providing a trial layout in the chip for a victim net and a set of aggressor nets which have segments that lie next to the victim net;

2) assigning to the trial layout of the victim net, the parameters of a line capacitance, a line resistance, and a driver output resistance; and assigning to the trial layout of each aggressor net, the parameters of a coupling capacitance to the victim net, and a voltage transition;

3) estimating, for each aggressor net, a respective peak crosstalk voltage  $V_{sub.p}$  which the aggressor net couples into the victim net as a function  $V_{sub.p} = K(e_{sup.-X} - e_{sup.-Y})$  where K, X, and Y are products of said parameters;

4) modifying said trial layout and repeating the assigning and estimating steps until a summation of the estimated peak crosstalk voltages in the victim net is within an acceptable level; and,

5) building the chip with the modified layout for which the summation is within the acceptable level.

See particularly: fig. 1 (topology), fig. 5a-6 (influence of switching rate on crosstalk - grouped), fig. 8 (margin), fig. 11 (aggressor transitions), fig. 19, 25 (grouping).

**Claims 1-16 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Carlson et al..**

Carlson et al. disclose a method for *analyzing cross-coupling between an attacker signal line, upon which an attacker signal resides, and a victim signal line,*

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*upon which a victim signal resides.* The method in the present invention comprises the acts of *selecting the victim signal, selecting the attacker signal, performing timing filtering on a plurality of signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines, performing logic filtering on the plurality of signal lines to identify a second set of potential attacker signals on a second set of potential attacker signal lines*, and reducing the effects of the cross-coupling between at least one of the said potential attacker signal lines and the victim signal line.

In particular, Carlson et al. (Fig. 1, 3-5, 7 and corresponding text) discloses timing delay prediction; determine electromagnetic coupling between aggressor and victim wires; group the aggressor wires as a function of timing; adjust timing margin so that coupling does not affect circuit switching; take into account signal strengths (claim 2); group aggressor wires into likely, possible, unlikely; consider only likely; consider only likely and possible; scaling the aggressor wires (claim 7).

***Applicant's arguments are not persuasive.*** Applicant's basic argument appears to be that while the art "...discloses crosstalk, delay prediction, and/or routing", it does not disclose categorizing the crosstalk interaction into likely, possible or unlikely to cause crosstalk. ***The Examiner respectfully submits that Applicants have not specifically addressed the sections of the prior art as indicated in the prior art rejections.***

*Gao et al.* disclose determining whether a line is critical (page 465, col. 1); crosstalk constraints and "ranking" of critical conductors (page 465, col. 2, first full paragraph; page 466, section II, first paragraph); ranking and routing the channels (page 465, col. 2, second paragraph to end of section I, page 466; page 466, section II, first and

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second paragraphs); and track permutations (page 467, col. 1, last paragraph to page 470, end of section IV) and timing slack (pg. 472, col. 2 to pg 473).

*Petschauer et al.* disclose a method according to the present invention, an integrated circuit chip is fabricated by the following steps: 1) providing a trial layout in the chip for a victim net and a set of aggressor nets which have segments that lie next to the victim net; 2) assigning to the trial layout of the victim net, the parameters of a line capacitance, a line resistance, and a driver output resistance; and assigning to the trial layout of each aggressor net, the parameters of a coupling capacitance to the victim net, and a voltage transition; 3) estimating, for each aggressor net, a respective peak crosstalk voltage  $V_{sub.p}$  which the aggressor net couples into the victim net as a function  $V_{sub.p} = K(e^{sup.-X} - e^{sup.-Y})$  where K, X, and Y are products of said parameters; 4) modifying said trial layout and repeating the assigning and estimating steps until a summation of the estimated peak crosstalk voltages in the victim net is within an acceptable level; and, 5) building the chip with the modified layout for which the summation is within the acceptable level. See particularly: fig. 1 (topology), fig. 5a-6 (influence of switching rate on crosstalk - grouped), fig. 8 (margin), fig. 11 (aggressor transitions), fig. 19, 25 (grouping).

*Carlson et al.* (Fig. 1, 3-5, 7 and corresponding text) discloses timing delay prediction; determine electromagnetic coupling between aggressor and victim wires; group the aggressor wires as a function of timing; adjust timing margin so that coupling does not affect circuit switching; take into account signal strengths; group aggressor wires

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into likely, possible, unlikely; consider only likely; consider only likely and possible; scaling the aggressor wires.

As per the allegation that the prior art does not disclose categorizing the crosstalk interaction into likely, possible or unlikely to cause crosstalk, the Examiner would also like to point out that a reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings combination with his own knowledge of the particular art and be in possession of the invention. *In re Graves*, 36 USPQ2d 1697 (Fed. Cir. 1995); *In re Sasse*, 207 USPQ 107 (CCPA 1980); *In re Samour*, 197 USPQ 1 (CCPA 1978). For example, a skilled artisan knows that the probability that one conductor will electromagnetically perturb a second conductor increases as the distance between the conductors is reduced. This is elementary electromagnetic theory. Merely creating arbitrary (what is the criterion for the categorization?) and artificial categories between likely, possible or unlikely to cause crosstalk is not a patentable step above the prior art teachings. In any case, this is merely routine experimentation in a well known art. See MPEP 2144.05:

“A. Optimization Within Prior Art Conditions or Through Routine Experimentation

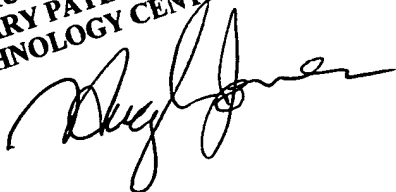
Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference

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process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%). See also *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). B. Only Result-Effective Variables Can Be Optimized A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In *re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy)."

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

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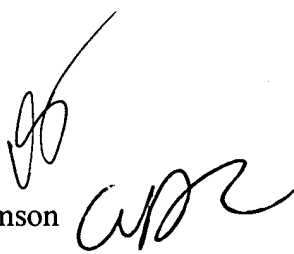
December 6, 2001

Conferees

Hugh Jones

Kevin Teska

William Thomson

Handwritten signatures of Kevin Teska and William Thomson. The signature for Kevin Teska is a stylized 'KT' and the signature for William Thomson is a cursive 'WThomson'.